EXHIBIT 4

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DUREL CORPORATION, Plaintiff-Cross Appellant, v. OSRAM SYLVANIA INC., Defendant-Appellant.

00-1261, -1391

UNITED STATES COURT OF APPEALS FOR THE FEDERAL CIRCUIT

2001 U.S. App. LEXIS 14275

June 27, 2001, Decided

PRIOR HISTORY:
[*1] Appealed from: United States District Court for the District of Arizona. Senior Judge Edward Rafeedie.

DISPOSITION:
REVERSED-IN-PART and VACATED-IN-PART.

CASE SUMMARY

PROCEDURAL POSTURE: Defendant appealed from the judgment of the United States District Court for the District of Arizona holding that it infringed defendant's patents, from partial summary judgment dismissing its counterclaim for declaratory judgment of invalidity for failure to meet the enablement requirement of *35 U.S.C.S. § 112*, and denial of its motion for a new trial on damages. Defendant cross-appealed from the finding of no willful infringement.

OVERVIEW: The appellate court held the district court erred in its construction of the term "oxide coating." The specification defined it as a material made up primarily of metal cations and oxygen, but which could contain minor amounts of other elements and compounds originating in the precursor materials or phosphor particles. It required that the coating primarily comprise metal oxide compounds, binary compounds containing only metal cations and oxygen. The lower court failed to give meaning to the established term metal oxide and to the specification's consistent use of that term. Given that there was no infringement, remand was not necessary as to the doctrine of equivalents. Defendant's coatings contained an additional element, hydrogen, and therefore did not meet the claim limitation. The erroneous application of enablement law was compounded by the erroneous claim construction. Without any record as to whether the disclosure enables the preparation of oxide coatings within the scope of the claims, the appellate court was unable to conclude whether the claims were fully enabled. Remand to consider the validity of a patent that was not infringed was a poor use of judicial resources.

OUTCOME: The court of appeals reversed the court's judgment of infringement. The remaining issues relating to infringement were moot. The appellate court vacated the district court's grant of partial summary judgment that the patents were not invalid.

CORE CONCEPTS

Patent Law : Infringement : Claim Interpretation
Patent Law : Infringement : Acts of Infringement
A determination of patent infringement requires a two-step analysis. First, the claim must be properly construed to determine its scope and meaning. Second, the claim as properly construed must be compared to the accused device or process. Literal infringement requires that every limitation of the patent claim be found in the accused device.

Patent Law : Jurisdiction & Review : Standards of Review
Patent claim construction is an issue of law, that an appellate court reviews de novo. Whether a claim encompasses an accused device, either literally or under the doctrine of equivalents, is an issue of fact that, following a bench trial, the court of appeals reviews for clear error. Enablement is a question of law, based on underlying factual inquiries, that the appellate court reviews de novo.

Patent Law : Infringement : Claim Interpretation

A court is free to consult dictionary definitions to interpret patent claim terms, so long as the dictionary definition does not contradict any definition found in or ascertained by a reading of the patent documents.

Civil Procedure : Appeals : Reviewability : Preservation for Review
An appellee is not expected to defend a judgment in its favor on the basis of a theory of liability that was never presented to the fact-finder.

Patent Law : Infringement : Doctrine of Equivalents
If a theory of equivalence would vitiate a claim limitation, then there can be no infringement under the doctrine of equivalents as a matter of law.

Patent Law : Specification & Claims : Enablement Requirement
The dispositive question of enablement does not turn on whether the accused product is enabled. Rather, to be enabling, the specification of the patent must teach those skilled in the art how to make and use the full scope of the claimed invention without undue experimentation.

Patent Law : Specification & Claims : Enablement Requirement
Enablement is a question of law based on underlying factual determinations.

Patent Law : Specification & Claims : Enablement Requirement
The enablement requirement is met if the description enables any mode of making and using the invention.

COUNSEL:
Laurence H. Pretty, Christie, Parker & Hale, LLP, of Pasadena, California, argued for plaintiff-cross appellant. Of counsel was John David Carpenter.

Robert G. Krupka, Kirkland & Ellis, of Los Angeles, California, argued for defendant-appellant. With him on the brief were John M. Desmarais, and Robert A. Appleby, Kirkland & Ellis, of New York, New York; and Christopher Landau, Kirkland & Ellis, of Washington, DC. Of counsel was Jay I. Alexander, Kirkland & Ellis, of Washington, DC.

JUDGES:
Before LOURIE, Circuit Judge, PLAGER, Senior Circuit Judge, and GAJARSA, Circuit Judge.

OPINIONBY:
LOURIE

OPINION:

LOURIE, Circuit Judge.

Osram Sylvania Inc. ("Sylvania") appeals from the judgment of the United States District Court for the District of Arizona holding that Sylvania infringed Durel Corporation's U.S. Patents *5,418,062*, *5,439,705*, and *5,156,885*. *Durel Corp. v. Osram Sylvania Inc., 1998 U.S. Dist. LEXIS 22592, 52 USPQ2d 1418, 1435 (D. Ariz. 1998)*. Sylvania also appeals from the district court's grant of partial summary [*2] judgment dismissing Sylvania's counterclaim for declaratory judgment of invalidity for failure to meet the enablement requirement of *35 U.S.C. § 112*. Id. Finally, Sylvania appeals from the district court's denial of its motion for a new trial on damages. Durel Corp. v. Osram Sylvania Inc., No. 95-1750 (D. Ariz. Apr. 13, 2000). Durel cross-appeals from the district court's denial of its motion for judgment as a matter of law that Sylvania willfully infringed the *'885* patent. Durel Corp. v. Osram Sylvania Inc., No. 95-1750 (D. Ariz. Apr. 21, 2000). Durel also cross-appeals from the denial of its motion to award damages for the period between the close of discovery and entry of the injunction. Durel Corp. v. Osram Sylvania Inc., No. 95-1750 (D. Ariz. May 4, 2000). Because the district court erred in its construction of the term "oxide coating" and Sylvania's coatings do not infringe Durel's patents as a matter of law, we reverse.

BACKGROUND

Durel is the exclusive licensee n1 of the *'062*, *'705*, and *'885* patents, which relate to encapsulated electroluminescent ("EL") phosphor particles used in applications such as illuminating watch faces and instrument [*3] panels in motor vehicles. Encapsulating phosphor particles within the claimed oxide coatings increases the particles' resistance to deterioration attributable to atmospheric humidity. *Durel, 52 USPQ2d at 1420*. All of the independent claims of the patents recite that the phosphor is encapsulated by an "oxide coating." Claim 1 of the *'062* patent claims a product (in relevant part) as follows:

1. Encapsulated electroluminescent phosphor particles, each comprising a particle of zinc sulfide-based electroluminescent phosphor which is essentially completely encapsulated within a substantially transparent, continuous metal oxide coating ....

'062 patent, col. 14, ll. 24-28 (emphasis added). The specification of each patent defines "oxide coating" as follows:

As used herein, "oxide coating" means a material made up primarily of metal cations and oxygen, but which may contain minor amounts of other elements and compounds originating in the precursor materials or phosphor particles, which can be generated in coating form on phosphor particles under the conditions described herein. Advantageous results have been obtained with coatings of titania [*4] (TiO[2]) and titania/silica TiO[2]/(SiO[2]). It is believed that useful results may also be obtained with other oxides formed from precursors in low temperature reactions such as silica (SiO[2]), alumina (Al[2]O[3]), tin oxide (SnO[2]), zirconia (ZrO[2]), etc., and similarly formed compound oxides such as mullite (3Al[2]O[3]. 2SiO[2]).

'062 patent, col. 5, ll. 36-49; *'885* patent, col. 5, ll. 33-45; *'705* patent, col. 5, ll. 36-49 (emphasis added).

n1 Sylvania does not dispute that Durel has standing to bring this patent infringement suit without joining the owner of the patents, Minnesota Mining and Manufacturing Co. ("3M"). We nevertheless have addressed the question whether Durel possesses all substantial rights under the patent such that it has standing to sue without joining 3M because that question is jurisdictional. See *Mentor H/S, Inc. v. Med. Device Alliance, Inc., 240 F.3d 1016, 1018, 57 USPQ2d 1819, 1821 (Fed. Cir. 2001).* We have reviewed the license agreement between 3M and Durel and conclude that Durel received all substantial rights under the patent within the meaning of *Vaupel Textilmaschinen v. Meccanica Euro Italia, 944 F.2d 870, 875-76, 20 USPQ2d 1045, 1049 (Fed. Cir. 1991),* and may therefore sue for infringement without joining 3M.

[*5]

The patents each disclose the same twenty-eight examples, three of which coat phosphor with TiO[2]/SiO[2]; the remaining twenty-five examples coat phosphor with TiO[2]. *'062* patent, col. 11, ll. 55 to col. 14, ll. 22. The oxide coating can be formed by the hydrolysis reaction of precursor molecules such as titanium tetrachloride (TiCl[4]) and water, which react in the vapor phase to produce TiO[2] and hydrochloric acid. Id. at col. 6, ll. 41-52. Moreover, a high ratio of titanium tetrachloride molecules to water molecules is maintained "to promote the formation of more anhydrous titania films which are believed to provide optimum protection against humidity-accelerated decay." Id. at col. 7, ll. 20-22. If encapsulation is performed at low temperatures, the coatings may be insufficiently moisture impermeable, "a result it is believed of having a more open or more hydrated structure." Id. at col. 8, ll. 12-13.

Sylvania manufactures two types of phosphors relevant to this appeal: EL-type phosphors coated by a fluidized-bed reaction of water vapor and trimethyl aluminum; and newly encapsulated ("NE")-type phosphors coated by a water-free pyrolysis reaction of [*6] trimethyl aluminum, oxygen, and ozone. It is undisputed on appeal that the coatings on both the EL- and NE-type phosphors are a mixture of aluminum oxide hydroxide, AlO(OH), and aluminum trihydroxide, Al(OH)[3]. *Durel, 52 USPQ2d at 1429.*

Durel sued Sylvania for infringement of its *'062*, *'705*, and *'885* patents by the EL-type phosphors. Id. at 1427. The district court construed the term "oxide coating" as being primarily composed of metal cations and oxygen, but also possibly containing other elements or compounds found in the original precursor ingredients or phosphor particles. Id. at 1428. The court then concluded that "a synthetic chemist would interpret the [patents] by using atomic mass to determine whether a coating is primarily metal cations and oxygen atoms with minor amounts of other elements and compounds found in the precursors." Id. at 1428. The court calculated that AlO(OH) is composed of approximately 43.3% aluminum, 53.3% oxygen, and 3.4% hydrogen, and that Al(OH)[3] n2 is composed of 49.1% aluminum, 45.3% oxygen, and 5.6% hydrogen. n3 Id. at 1429. Finally, the court concluded that AlO(OH), containing 96.6% metal cations and oxygen [*7] and 3.4% other elements, and Al[2](OH)[3], containing 94.4% metal cations and oxygen and 5.6% other elements, fell squarely within its construction of the term "oxide coating." Id. Sylvania's coatings contained at least 94.4% aluminum and oxygen, satisfying the "primarily" requirement of the court's definition of "oxide coating." Id. The court concluded that the amount of hydrogen, at most 5.6%, was minor in light of the amount of metal cations and oxygen in the coating. Id. Moreover, because the court found that hydrogen originated from water, which is defined in the specification as a precursor compound, it fell within the definition of the minor (non-metal or oxygen) ingredients of the coating. Id. The court therefore concluded that Sylvania's coating satisfied the oxide coating claim requirement and granted partial summary judgment to Durel. Id.

n2 The court used an incorrect formula for aluminum trihydroxide, viz., Al[2](OH)[3], in its calculation. That error, however, was immaterial because the percentage of hydrogen present is small in both Al(OH)[3] and Al[2](OH)[3]. [*8]

n3 The court stated that its calculations were based on the atomic masses of the most commonly found isotopes of aluminum, oxygen, and hydrogen. *Durel, 52 USPQ2d at 1429.* We question whether it did so, because it apparently used the atomic number, representing the number of protons, rather than atomic mass, which is an average value based on an element's isotopic composition and includes both protons and neutrons. Steven S. Zumdahl, Chemistry 75 (2d ed. 1989). Aluminum's atomic number is 13 and its atomic mass is 26.98; oxygen's atomic number is 8 and its atomic mass is 16.00; and hydrogen's atomic number is 1 and its atomic mass is 1.008. Id. Therefore, using atomic masses, AlO(OH) contains 1.7% hydrogen and Al(OH)[3] contains 3.9% hydrogen. That error was also not material.

Finally, the court dismissed Sylvania's counterclaim for declaratory judgment of invalidity for lack of enablement under *35 U.S.C. 112,* P 1, concluding that Sylvania had not proven by clear and convincing evidence that Durel's patents were nonenabling. Id. at 1435. The court [*9] stated that "the only question at issue in this proceeding is whether Durel's patents fail to enable without undue experimentation a trimethyl aluminum precursor ("TMA") and alumina coating as used by [Sylvania]." Id. at 1432. The court then granted partial summary judgment to Durel, holding that the patents were enabled because it found that undue experimentation was not required to make an alumina-coated EL-type phosphor from the known TMA precursor. Id. at 1435. Because "the only precursor and coating at issue in this case is TMA and alumina," the court did not follow through with its observation that "it is apparent that some of the precursors or coating material suggested by Durel would require undue experimentation." Id.

Sylvania then began manufacturing NE-type phosphors, which are produced by pyrolysis, and moved for summary judgment of noninfringement with respect to those phosphors, arguing that claim 1 of the *'062* patent is limited to phosphors produced by hydrolysis. The court declined to construe the claim as being limited to hydrolysis and denied Sylvania's motion. Durel Corp. v. Osram Sylvania Inc., No. 95-1750 (D. Ariz. Feb. 12, 1999) (order). Sylvania [*10] stipulated to infringement based on the court's claim construction and a trial was held on damages and willfulness. The jury returned a damages verdict of almost $ 50 million but declined to find that the infringement was willful.

DISCUSSION

A determination of infringement requires a two-step analysis. *Gentry Gallery, Inc. v. Berkline Corp., 134 F.3d 1473, 1476, 45 USPQ2d 1498, 1500 (Fed. Cir. 1998).* "First, the claim must be properly construed to determine its scope and meaning. Second, the claim as properly construed must be compared to the accused device or process." Id. "Literal infringement requires that every limitation of the patent claim be found in the accused device." *Gen. Mills, Inc. v. Hunt-Wesson, Inc., 103 F.3d 978, 981, 41 USPQ2d 1440, 1445 (Fed. Cir. 1997).* Claim construction is an issue of law, *Markman v. Westview Instruments, Inc., 52 F.3d 967, 970-71, 34 USPQ2d 1321, 1322 (Fed. Cir. 1995)* (en banc), aff'd, *517 U.S. 370, 134 L. Ed. 2d 577, 116 S. Ct. 1384 (1996),* that we review de novo, *Cybor Corp. v. FAS Techs., Inc., 138 F.3d 1448, 1456, 46 USPQ2d 1169, 1172 (Fed. Cir. 1998)* [*11] (en banc). Whether a claim encompasses an accused device, either literally or under the doctrine of equivalents, is an issue of fact that, following a bench trial, we review for clear error. *WMS Gaming, Inc. v. Int'l Game Tech., 184 F.3d 1339, 1346, 51 USPQ2d 1385, 1389 (Fed. Cir. 1999).* Enablement is a question of law, based on underlying factual inquiries, that we review *de novo. Enzo Biochem, Inc. v. Calgene, Inc., 188 F.3d 1362, 1369, 52 USPQ2d 1129, 1134 (Fed. Cir. 1999).*

A. Claim Construction

Sylvania argues that the district court erred in its construction of the term "oxide coating," urging that the definition in the specification requires that the coating be primarily composed of metal oxides, which are binary compounds, and that the "other elements and compounds" it may contain are only impurities of the coating. Thus, according to Sylvania, the primary metal oxide molecule of the coating may not itself contain other elements such as hydrogen that would make that molecule something that is not classifiable as a metal oxide. Sylvania also argues that the court erred in its conclusion that claim 1 of the *'062* patent is not limited [*12] to phosphors produced by hydrolysis.

Durel responds that the court correctly adopted the special definition of the term "oxide coating" set forth in the specification, which includes metal cations, oxygen, and minor amounts of another element such as hydrogen. Durel urges that a definition that excludes the presence of hydrogen would exclude a preferred embodiment in the specification because all of the examples of metal oxides in the specification inherently include some hydroxide in their hydrated form. Durel also urges that claim 1 of the *'062* patent is not limited to phosphors produced by hydrolysis.

We agree with Sylvania that the district court erred in its construction of the term "oxide coating." We rely primarily on the definition in the specification, which defines "oxide coating" as "a material made up primarily of metal cations and oxygen, but which may contain minor amounts of other elements and compounds originating in the precursor materials or phosphor particles." *'062* patent, col. 5, ll. 37-40 (emphasis added). We conclude that this language requires that the "oxide" coating must primarily comprise metal oxide compounds, viz., binary compounds containing [*13] only metal cations and oxygen. This definition is supported by the examples that immediately follow in the specification, all of which are binary compounds containing only metal cations and oxygen: TiO[2], TiO[2]/SiO[2], SiO[2], Al[2]O[3], SnO[2], ZrO[2], and 3Al[2]O[3] . 2SiO[2]. According to the specification, the coating may indeed contain "minor amounts of other elements and compounds originating in the precursor materials or phosphor particles," such as water or hydroxides, but it may not be composed primarily of compounds that are not binary metal oxides.

This interpretation is also supported by dictionary definitions of "metal oxide," which we are free to consult to interpret claim terms, "so long as the dictionary definition does not contradict any definition found in or ascertained by a reading of the patent documents." *Vitronics Corp. v. Conceptronic, Inc., 90 F.3d 1576, 1584 n.3, 39 USPQ2d 1573, 1578 n.3 (Fed. Cir. 1996).* Compounds containing additional elements other than metal and oxygen are not generally classified as metal "oxides." See, e.g., McGraw-Hill Dictionary of Scientific and Technical Terms 1425 (5th ed. 1994) (defining [*14] "oxide" as a "binary chemical compound in which oxygen is combined with a metal"); Hawley's Condensed Chemical Dictionary 861 (12th ed. 1993) (defining "oxide" as "[a] mineral in which metallic atoms are bonded to oxygen atoms"). The district court's principal error in its claim construction was in using calculations of atomic mass percent to interpret the "primarily" language. In doing so, it failed to give meaning to the established term "metal oxide" and to the specification's consistent use of that term.

We are not persuaded by Durel's argument that this definition excludes a preferred embodiment of metal hydroxides that are (allegedly) inherently present in the disclosed metal oxides. We find no disclosure of metal hydroxides in the specification. Durel cites a reference showing that the term alumina trihydrate (Al[2]O[3]. 3H[2]O) may be used interchangeably with aluminum trihydroxide Al(OH)[3]. n4 Even accepting that this may be true in some circumstances, it is not relevant here. The specification teaches that oxide hydration should be minimized, see, e.g., *'062* patent, col. 7, ll. 15-22 (stating that the ratio of tetrachloride molecules to water molecules [*15] should be high to promote the formation of optimal anhydrous titania films) (emphasis added), thereby indicating that compounds that are primarily hydrates and hydroxides are not intended. Moreover, if the inventor had intended to equate metal oxides with metal hydroxides, he could have so stated and avoided exclusively exemplifying metal oxides as binary compounds. Therefore, according to the specification's explicit definition of "oxide coating" and its description of such coatings, the claimed oxide coating must primarily comprise binary metal oxides containing only metal cations and oxygen. Other elements and compounds originating in precursor materials, such as hydrated metal oxides or metal hydroxides, if present at all, may only be present in minor amounts as impurities. Accordingly, we conclude that the district court erred in construing the term "oxide coating" as not requiring a primary component that is a binary metal oxide.

n4 Alumina as a Ceramic Material 3-4 (Walter H. Gitzen, ed., 1970).

[*16]

B. Infringement

We also agree with Sylvania that the district court clearly erred in finding infringement. In Sylvania's opening brief, Sylvania requested that we remand this case for a new determination of infringement if we disagree with the court's claim construction. At oral argument, however, Sylvania changed its request, stating that a judgment of noninfringement as a matter of law would be appropriate because Durel acknowledged in its response brief that the coatings on the accused EL- and NE-type phosphors are both mixtures of AlO(OH) and Al(OH)[3]. We agree and conclude that there is no genuine issue of material fact concerning infringement under a proper construction of the term "oxide coating." As we have held, the claimed "oxide coating" must primarily comprise a binary compound or compounds containing only metal cations and oxygen. It is undisputed that the accused phosphor coatings primarily comprise compounds containing hydrogen (H) as hydroxide (OH), in addition to metal cations (Al) and oxygen (O), rather than binary metal oxides. The hydroxide is part of the primary metal compound itself; it is not present as a mere impurity of the coating material. Thus, [*17] Sylvania's accused hydroxide coatings do not meet the definition of the claim limitation "oxide coating." We therefore reverse the district court's grant of partial summary judgment of infringement.

The district court did not reach the question whether Sylvania's AlO(OH) and Al(OH)[3] phosphor coatings infringe the "oxide coating" limitation under the doctrine of equivalents. Although Durel did not raise that issue on appeal, it did not thereby surrender its ability to argue that issue altogether. An appellee is not expected to defend a judgment in its favor on the basis of a theory of liability that was never presented to the fact-finder. *Exxon Chem. Patents, Inc. v. Lubrizol Corp., 137 F.3d 1475, 45 USPQ2d 1865, 1868 (Fed. Cir. 1998).* When the district judge construed the claim language in Durel's favor, the doctrine of equivalents issue in the case became moot. See id. The doctrine of equivalents only became a critical issue after our disagreement with the court's claim construction and reversal of its finding of literal infringement.

We decline to remand the case for the district court to hear arguments on infringement under the doctrine of equivalents, [*18] however, because we conclude that no reasonable fact-finder could find such infringement. As we have construed the claims, the "oxide coating" must primarily comprise binary compounds containing only metal cations and oxygen. Sylvania's AlO(OH) and Al(OH)[3] coatings contain an additional element, hydrogen, and therefore do not meet the claim limitation that only metal cations and oxygen be present in the primary component of the oxide coating. A finding of equivalence would vitiate the limitation "oxide coating," which we have concluded is defined to primarily consist of a binary compound. See *Tronzo v. Biomet, Inc., 156 F.3d 1154, 1160, 47 USPQ2d 1829, 1834 (Fed. Cir. 1998)* ("If a theory of equivalence would vitiate a claim limitation, however, then there can be no infringement under the doctrine of equivalents as a matter of law."). We therefore conclude that Sylvania's coatings do not infringe Durel's patents under the doctrine of equivalents. We decline to reach the question whether claim 1 of the *'062* patent is limited to an oxide coating produced by hydrolysis, as that question is mooted by our conclusion of noninfringement of the oxide coating limitation. [*19]

C. Enablement

Sylvania asserts that the court erred in dismissing its enablement defense because the court treated lack of enablement as a "personal defense." At a minimum, Sylvania requests that we vacate the district court's judgment and permit Sylvania to demonstrate at trial that undue experimentation is necessary to practice the claimed invention. Specifically, Sylvania asserts that the inventor, Kenton D. Budd, was only able to make an alumina coating from a TMA precursor after referring to Sylvania's own disclosure in U.S. Patent *5,080,928*, and that he could not make it from a dimethyl aluminum chloride precursor. Sylvania also asserts that the invention is not enabled because Budd was unable to obtain a moisture-resistant or hermetic coating with a titanium isopropoxide precursor, which is one of the precursors suggested in the specification. Sylvania finally argues that Budd had difficulty preparing silicon dioxide coatings from the silicon ethoxide precursor disclosed in the specification, and that Budd could not successfully make a zinc oxide coating.

Durel responds that it was not improper for the district court to consider the accused products in its enablement [*20] analysis, and that the court's focus on the accused products must be viewed in light of the court's additional conclusion "that [Sylvania] has not provided clear and convincing evidence that the Durel patents fail to enable one skilled in the art as required by section 112, paragraph 1, for every suggested precursor and oxide coating found in the Durel patents." *Durel, 52 USPQ2d at 1432.* Moreover, Durel argues that an alumina coating from TMA was enabled in a Rothschild patent, and that Budd did not learn of the *'928* patent until after he had successfully produced an alumina coating from TMA. Durel also argues that dimethyl aluminum chloride was not a suggested precursor and that, in any event, the alumina coating is enabled by the TMA precursor. Durel also asserts that the patent enables a titanium dioxide coating made from the titanium tetrachloride precursor, and that enablement by one precursor is sufficient to satisfy the statutory requirement. Durel argues that Budd's experimentation to make the silicon dioxide coating was not undue. Finally, Durel argues that Budd's inability to make the zinc oxide coating does not render the claim invalid under our decision [*21] in *Atlas Powder Co. v. E.I. du Pont de Nemours & Co., 750 F.2d 1569, 1576, 224 USPQ 409, 414 (Fed. Cir. 1984).*

Although we have concluded that Sylvania does not infringe Durel's patents, the validity of these patents has been placed in issue by Sylvania's declaratory judgment counterclaim. Accordingly, we will address its enablement arguments in order to correct the district court's erroneous analysis. See *Cardinal Chem. Co. v. Morton Int'l, Inc., 508 U.S. 83, 98, 26 USPQ2d 1721, 1728, 124 L. Ed. 2d 1, 113 S. Ct. 1967 (1993)* (holding that the Federal Circuit abused its discretion in not ruling on a declaratory judgment counterclaim concerning validity when noninfringement had been found); see, e.g., *N. Am. Vaccine, Inc. v. Am. Cyanamid Co., 7 F.3d 1571, 1579, 28 USPQ2d 1333, 1339 (Fed. Cir. 1993)* (deciding both noninfringement and validity issues).

The district court dismissed Sylvania's counterclaim seeking a declaratory judgment of invalidity for lack of enablement, stating that "the only question at issue in this proceeding is whether Durel's patents fail to enable without undue experimentation [use of] a trimethyl aluminum [*22] precursor ("TMA") [to make an] alumina coating as used by [Sylvania]." *Durel, 52 USPQ2d at 1432.* We agree with Sylvania that the court thus made an error of law. The dispositive question of enablement does not turn on whether the accused product is enabled. Rather, "to be enabling, the specification of the patent must teach those skilled in the art how to make and use the full scope of the claimed invention without undue experimentation." *Genentech, Inc. v. NovoNordisk, A/S, 108 F.3d 1361, 1365, 42 USPQ2d 1001, 1004 (Fed. Cir. 1997)* (emphasis added). If Sylvania had shown that a significant percentage of oxide coatings within the scope of the claims were not enabled, that might have been sufficient to prove invalidity. See *Atlas Powder, 750 F.2d at 1576-77, 224 USPQ at 414* ("If the number of inoperative combinations becomes significant, and in effect, forces one of ordinary skill in the art to experiment unduly in order to practice the claimed invention, the claims might indeed be invalid.").

The district court's erroneous application of enablement law was then further compounded by what we have now concluded was its erroneous [*23] claim construction. Having found that Sylvania's AlO(OH) and Al(OH)[3] coatings were within the scope of the claims, and enabled, the court ended its enablement inquiry. Those coatings are in fact irrelevant to enablement because they are outside the scope of the claims as we have construed them, whereas a fuller set of fact-findings within the scope of the claims would have been needed to decide the enablement issue. The court therefore erred in determining that the claims were not invalid based only on its conclusion that coatings outside the scope of the claims were enabled.

The district court did not express any ultimate opinion as to enablement of other oxide coatings within the scope of the claims, although, significantly, it stated without further explanation that "it is apparent that some of the precursors or coating material suggested by Durel would require undue experimentation." *Durel, 52 USPQ2d at 1435.*

Enablement is a question of law based on underlying factual determinations. *Enzo, 188 F.3d at 1369, 52 USPQ2d at 1134.* Without any specific factual determinations in the record below regarding whether the disclosure enables the preparation [*24] of oxide coatings within the scope of the claims, we are unable to conclude as a matter of law whether the claims are fully enabled. We put to rest, however, Sylvania's argument that the patent is not enabled because the inventors failed to prepare coatings from each of the precursors suggested in the specification. If the disclosure enables a person of ordinary skill in the art to make a particular metal oxide coating from at least one of the suggested precursors, the enablement requirement for that oxide coating is satisfied. See *Johns Hopkins Univ. v. CellPro, Inc., 152 F.3d 1342, 1361, 47 USPQ2d 1705, 1719 (Fed. Cir. 1998)* (stating that the enablement requirement is met if the description enables any mode of making and using the invention). The court's statement that use of some metal precursors would require undue experimentation, even if true, would therefore not be fatal to the validity of the claim if the patent specification enabled the preparation of the particular metal oxide coating asserted to be non-enabled from another precursor of that metal. For example, if the patent specification enabled a person of ordinary skill in the art to make the claimed titanium [*25] dioxide coating from a titanium tetrachloride precursor, it would be irrelevant for purposes of validity if the patent specification did not enable its preparation from a titanium isopropoxide precursor.

Although Sylvania's arguments with respect to precursors are off the mark, Sylvania could still have succeeded in its enablement defense if it had proved that the disclosure does not enable someone of ordinary skill in the art to make oxide coatings within the full scope of the claims. We cannot decide this question without specific factual findings. If our noninfringement conclusion were not an adequate basis for our decision, we would vacate the district court's grant of partial summary judgment that Durel's claims are enabled and the patent is hence not invalid and remand the case for a determination whether the disclosure adequately enables the scope of the claims. However, under the circumstances, a remand is not necessary. Remand to consider the validity of a patent that we have held not to be infringed would be a poor use of judicial resources. We simply vacate the district court's grant of partial summary judgment that the patents are not invalid.

In view of our reversal [*26] of the district court's grant of partial summary judgment of infringement, we need not consider Sylvania's appeal from the denial of its motion for a new trial or Durel's cross-appeals on willfulness and damages.

The issues in this case have not been easy ones to decide and the district court carefully and conscientiously waded through the issues. While we have reversed the district court, we do so with the recognition that the issues are not ones of clear-cut certainty about which reasonable differences cannot exist.

CONCLUSION

Because the district court erred in its interpretation of the term "oxide coating" and the accused coatings do not meet that claim limitation as a matter of law, we reverse the court's judgment of infringement. The remaining issues relating to infringement are moot. Accordingly, we

REVERSE-IN-PART and VACATE-IN-PART.